APPENDIX B
NAS AVIATION RESEARCH PLAN PERFORMANCE DATA SECTION

The following tables are based on data extracted from the FAA performance plan and represents Government Performance and Results Act (GPRA) data specific to the R,E&D program.

Table B-1 shows how the FY 2000 R,E&D budget request will be allocated toward accomplishing the performance goals.

Table B-2 identifies FY 2000 initiatives and projects that support FAA focus areas. The focus areas are specific problem areas the FAA will address regarding the three performance goals designated by the FAA.

Table B-3 links R,E&D program chapters to specific performance indicators, which are derived from the performance plan prepared for the FAA.

Table B-1. FY 2000 R,E&D Budget Request Allocation

		STRATEGIC PLAN GOAL	System Safety: By 2007, reduce U.S. aviation fatal accident rates by 80 percent from 1996 levels	Security: Eliminate security incidents in the aviation system	System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in applying FAA and aerospace resources
Program Area/Program		Budget Request			
A1.	System Development and Infrastructure	18,043	2,902	411	14,601
A2.	Capacity and Air Traffic Management Technology	85,421	36,290	0	48,900
A3.	Communications, Navigation, and Surveillance	16,939	4,196	0	12,624
A4.	Weather	15,722	8,145	0	7,567
A5.	Airport Technology	7,516	2,761	0	4,719
A6.	Aircraft Safety Technology	36,127	35,968	0	0
A7.	System Security Technology	51,235	0	51,235	0
A8.	Human Factors (HF) and Aviation Medicine	24,089	23,026	0	900
A9.	Environment and Energy	3,641	*see the note below		
A10.	Strategic Partnerships	3,267	1,296	1,296	647
	Total	262,000	115,459	52,942	89,958

* Environment and Energy funding supports the FAA, enabling environmental goals of understanding aerospace environmental impacts and reducing them.

Table B-2. Safety Focus Areas and Related R,E&D Projects

FOCUS AREA	R,E&D PROJECTS
Safety Information Sharing and Analysis. To reduce the aviation fatal accident rate by 80 percent, the FAA must become more than a regulator and enforcer. The agency must also be a partner with an aviation community that itself seeks to identify and address the root causes of aviation accidents. The Administrator's Safety Agenda discusses the attributes of this root-cause analysis. Voluntary sharing of safety information is fundamental to it. Protecting information and its sources is needed to gain voluntary disclosure. Thus, FAA must balance its enforcement activities with the need to share information in order to achieve maximum safety improvements. Traditional methods of reacting to each accident with new regulations to prevent its re-occurrence are no longer enough. The data now available from flight recorders, maintenance reports, and other sources can be used to analyze operations and develop procedures or regulations to prevent accidents before they occur.	• Aviation Safety Risk Analysis • Flight Deck/Maintenance/Systems Integration • Human Factors
Surveillance/Inspection. While partnership, information sharing, and addressing human factors are keys to improving safety, FAA must also get the maximum benefit possible from its surveillance and inspection programs. This means working with others on inspection and surveillance and targeting FAA resources where they will do the most good. The Administrator's Safety Agenda seeks to build on several recent initiatives in which feedback is a unifying element, including the Air Transportation Oversight System (ATOS), the Air Carrier Certification Standardization and Evaluation Team, and the Aircraft Certification Safety Evaluation Program (ACSEP).	• Aviation Safety Risk Analysis • Flight Deck/Maintenance/Systems Integration • Human Factors
Accident Prevention. Based on detailed root-cause analysis, FAA seeks to work with the aviation community to prevent accidents through appropriate targeted, systematic interventions. The Administrator's Safety Agenda highlights three broad initiatives, each addressing several issues that will change over time. The Airline Initiative addresses uncontained engine failures, runway incursions, controlled flight into terrain (CFIT), loss of control, weather, and flight deck human factors. The General Aviation Initiative addresses CFIT, weather, runway incursions, loss of control, and decisionmaking. Finally, the Cabin Safety Initiative addresses passenger seatbelt use, carry-on baggage, child restraints, and passenger interference.	• Runway Incursion Reduction • Cockpit Technology (TCAS) • Aviation Weather Research • Juneau, AK (windshear detection and forecast) • Communications (Data Link Communications/ Flight Information Services) • Aviation Human Factors • General Aviation and Vertical Flight Technology Program • Safe Flight 21 • Surveillance (Automatic Dependent Surveillance-Broadcast and Cockpit Display of Traffic Information • Aircraft Safety Technology Research Program • Airport Technology Research Program (airport movement area markings, signs, and lighting and wildlife hazard mitigation research)

Table B-3. Security Focus Areas and Related R,E&D Projects

FOCUS AREA	R,E&D PROJECTS
New Security Baseline. FAA's approach to aviation security has long been to establish a solid baseline level of security at airports throughout the Nation, then to address key vulnerabilities that remain. The White House Commission stressed the need to continue to improve the baseline security system for civil aviation.	• Explosives and Weapon Detection • Aircraft Hardening
Performance and Procedures. Maximize human factors—the performance capability of people working in the aviation system is critical to raising the aviation security baseline. This is done by constantly testing all parts of the aviation security system, improving the quality of its components, and assessing vulnerabilities that the system may not fully protect.	• Aviation Security Human Factors
Information Security Architecture. A security architecture is presently being defined for implementation as part of the National Airspace System (NAS) modernization. The information security architecture will specify the framework, policies, concepts of operation, and security engineering methodologies to minimize the vulnerability of NAS information to loss, misuse, or unauthorized access. Security vulnerability and risk assessments of the major systems will be completed to assist each NAS element to identify all significant potential security threats.	

Table B-4. System Efficiency Focus Areas and Related R,E&D Projects

Focus Areas	R,E&D PROJECTS
Systems Integration. Department of Transportation organizations, including FAA, along with Federal, state, local, and private organizations, all help improve transportation system efficiency. Only close communication and integration of efforts will lead to efficient transportation. Thus, when FAA's Research and Acquisition organization oversees development of a new technology, the Air Traffic Services organization must recognize the need for it and train and prepare its personnel to use it. When a new airport runway is built, lighting, approaches, and radar coverage must be provided so that the runway can be used. Airports must be well linked to local surface transportation and local transportation planning. Information technology architectures, including system security, telecommunications, and others, must be integrated under the NAS Architecture. More recently, there are opportunities to integrate commercial space transportation and aviation by having aircraft land at spaceports, using the Global Positioning System (GPS) to locate the position of space vehicles, and even, in the future, having space vehicles land and take off from commercial airports. This will require close coordination among FAA's Research and Acquisition, Air Traffic Services, and Commercial Space Transportation offices to support developing an integrated air and space traffic management system.	• Safe Flight 21 • Operational Concept Validation • Center for Advanced Aviation System Development • System Capacity, Planning and Improvements • Airport Technology Research Program (airport planning and design) • AT/AF Human Factors
Free Flight. Free Flight is a safe and efficient flight operating capability under instrument flight rules in which the operators have the freedom to select their paths and speeds in real time. air traffic restrictions are only imposed to ensure separation, to preclude exceeding airport capacity, to prevent unauthorized flight through special use airspace, and to ensure safety of flight. Restrictions are limited in extent and duration to correct the identified problem. Any activity that removes restrictions represents a move toward Free Flight.	• Traffic Flow Management • System Capacity, Planning and Improvements • Safe Flight 21 • Operations Concept Validation • Communications (Data Link) • Navigation (GPS, WAAS, and LAAS) • Surveillance (ADS-B) • Center for Advanced Aviation System Development • General Aviation and Vertical Flight Technology Program
NAS Modernization. The existing air traffic system must be updated, and problems such as Year-2000 compliance must be addressed. Opportunities such as those presented by information technology must be realized. Developing an efficient aerospace system requires describing the system to be built and how it meets aerospace needs. The NAS Architecture continually updates the system description.	• Center for Advanced Aviation System Development • System Capacity, Planning and Improvement • Operations Concept Validation • Navigation (GPS, WAAS, and LAAS) • Software Engineering R&D

Table B-5. Performance Goals Linked to Program and Financing Schedules

***Performance Area*:** Safety

***Strategic Plan Goal*:** By 2007, reduce U.S. aviation fatal accident rates by 80 percent from 1996 levels

PERFORMANCE GOALS	By 2007, reduce the U.S. aviation fatal accident rate per aircraft departure, as measured by a 3-year moving average, by 80 percent from the 3-year average for 1994–96. Interim Goal: By 2000, reduce aviation fatal accident rate by 15 percent of baseline levels.	By 2007, reduce the aviation fatal accident rate by 80 percent of baseline levels primarily attributed to human error.	By 2007, reduce the aviation fatal accident rate by 80 percent of baseline levels primarily attributed to elements in production systems, certification.	By FY 2000, enhance the AVR surveillance program to utilize risk management models and tools to forecast, identify, and target areas.	By FY 2002, increase the participation of industry in AVR partnership programs by 20 percent over the 1996 level.	By 2007, reduce by (x percent) the rate of airport accidents/incidents (i.e., accidents/incidents in which an aircraft leaves the pavement or in which Aircraft Rescue and Fire Fighting responds) from baseline levels that result in injury to persons or damage to aircraft.	By FY 2000, reduce the rates of operational errors and operational deviations by 10 percent from the 1994 baselines.	By 2005, ensure human factors issues are addressed in the acquisition and integration of 100 percent new and modified FAA aviation systems, including Free Flight Phase 1.	In FY 2000, reduce the total number of runway incursions by 15 percent from the CY 1997 baseline.
Appropriation and Budget Request									
Research, Engineering, and Development $TBD									
System Development and Infrastructure							●		●
Capacity and Air Traffic Management Technology	●						●		●
Communications, Navigation, and Surveillance									●
Weather	●								
Airport Technology	●					●			●
Aircraft Safety Technology	●		●	●	●				
System Security Technology									
Human Factors and Aviation Medicine	●	●					●	●	●
Environment and Energy									
R,E&D Partnerships									●

Table B-6. Performance Goals Linked to Program and Financing Schedules

***Performance Area*:** Security

***Strategic Plan Goal*:** Eliminate security incidents in the aviation system

PERFORMANCE GOALS	X percent improvement from the 1998 baseline by 2000 in detection of improvised explosive devices and weapons in carry-on baggage with no significant increase in operational impact.	X percent improvement from the 1998 baseline by 2000 in detection of improvised explosive devices and weapons carried on the person with no significant increase in operational impact.	Increase the percentage of selected passengers' checked bags screened with explosives detection systems from the 1999 baseline by 2001 while maintaining x percent detection of improvised explosive devices.	X percent increase from the 1999 baseline by 2001 in the system's ability to sustain compliance with security requirements.	Convene aviation security consortia at 134 airports and provide tools and assistance to airports that voluntarily maintain consortia.	By 2001, increase by 20 percent from the 1999 baseline the number of FAA facilities accredited as fully meeting security standards.	Improve cargo security by x percent from the 1997 baseline in detecting improvised explosive devices in small packages accepted by air carriers from unknown shippers for air transportation.
Appropriation and Budget Request							
Research, Engineering, and Development $TBD							
System Development and Infrastructure							
Capacity and Air Traffic Management Technology							
Communications, Navigation, and Surveillance							
Weather							
Airport Technology							
Aircraft Safety Technology							
System Security Technology	●	●	●	●	●	●	●
Human Factors and Aviation Medicine							
Environment and Energy							
R,E&D Partnerships							

Table B-7. Performance Goals Linked to Program and Financing Schedules

***Performance Area*:** System Efficiency

***Strategic Plan Goal*:** Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources

PERFORMANCE GOALS	Decrease system delays.	By FY 2000, reduce the rates of volume- and equipment-related delays by 20 percent from the 1994 baseline.	Demonstrate the capability of new systems to decrease the rate of delays due to weather by 10 percent by, 2002 relative to a historically significant delay rate baseline.	Increase system capacity attributable to airport infrastructure at the 50 busiest airports by 0.5 percent annually by 2000 from the 1998 baseline.	Maintain 93 percent of runway pavement in good or fair condition at all NPIAS airports by year 2002 from the 1998 baseline.	Increase system flexibility.	By FY 2000, reduce the amount of extra flight-plan miles associated with ATC-preferred routes by 10 percent from the 1994 baseline.	By FY 2000, increase the percentage of flight segments flown off of ATC-preferred routes to over 80 percent from the 1996 baseline.
Appropriation and Budget Request								
Research, Engineering, and Development $TBD								
System Development and Infrastructure		●				●	●	●
Capacity and Air Traffic Management Technology	●	●		●		●	●	●
Communications, Navigation, and Surveillance	●	●				●	●	●
Weather	●	●	●			●	●	●
Airport Technology	●	●			●			
Aircraft Safety Technology								
System Security Technology								
Human Factors and Aviation Medicine								
Environment and Energy								
R,E&D Partnerships								